Rombough, Kyrik

From: Alex J. Sagady & Associates [ajs@sagady.com]
Sent: Wednesday, May 14, 2008 3:43 PM
To: Rombough, Kyrik
Cc: john.Davidson@usd.edu
Subject: Hyperion IGCC power plant

Kyrik:

I'm trying to determine if the identified "Rectisol CO2 Vent" noted in section 5.2.2.4 of the application on page 134 is the same stack as the "Power Island Acid Gas Removal -- IGCCAGR" stack point source listed in the Hyperion Sources spreadsheet appearing in "Appendix A - Model Input Data" as an attachment to the RTP Environmental Associates - Air Dispersion Modeling and Class II Visibility Analysis for the Hyperion Energy Center in Union County, South Dakota"

The Section 5.2.2.4 information indicates emissions of 25.1 lb/hr carbon monoxide and 4.2 lb/hr hydrogen sulfide. However, the IGCCAGR vent information in the Appendix A to the air quality modeling report indicates a carbon monoxide emission rate of 2,279.29 lbs/hour. In addition, when looking at the carbon monoxide LST files for actual inputs to the AERMOD runs (i.e. File Hyperior_00_CO.LST) shows stack IGCCAGR with a source strength of
0.28719E+03 grams per second (= 2,277 lbs of CO per hour).

Assuming that the Rectisol CO2 Vent is the same as the IGCCAGR vent (can you please confirm that?), the information still doesn't hang together between the Section 5 emissions characterization, the Section 4 BACT determination and the air quality modeling inputs.

If this is actually a much large source of carbon monoxide than depicted in the emission characterization, then the CO BACT determination for this stack is wrong. If the emission characterization is correct, then the air quality modeling impact is overstated. If this is a source that has very high short term transient emissions, then nothing in the application fairly states this as the process emission characteristic of the equipment.

The application itself at Section 5.2.2.4 contains no basis for the stated emission projections which are stated as fait accompli. At the very least, the Applicant should be required to submit information which justifies these emission estimates and show why other noncondensible and non-soluble gases are not emitted from this source.

Finally, I can find no information about mercury emissions from either the refinery or the IGCC power plant, the mercury content of planned coal and coke use and the mercury contained in the planned crude oil feed to the refinery facility anywhere in the application. The soils impact study at the rear of the application implicitly recognizes that mercury will be emitted, but there are no mercury emission estimates anywhere to be found. If mercury chloride is present in crude reaching the facility, then there is potential for mercury to partition in the crude unit to the light ends and gases stream and then to both refinery fuel gas system and/or to the sulfur recovery units. If mercury sulfide is present in crude, mercury could partition in the crude unit to heavy ends and possibly petroleum coke.

None of the modeling to support the soils impact work was submitted in

the application or the air quality modeling zip files on the SD DENR web site. Do you have emissions information for mercury, including the mercury speciation between elemental mercury, particle bound mercury and oxidized mercury, as well as other planned heavy metal emissions from the facility?

Regards,

Alex Sagady, Environmental Consultant to
Living River Group of the Sierra Club

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Environmental Enforcement, Permit/Technical Review, Public Policy, Expert Witness Review and Litigation Investigation on Air, Water and Waste/Community Environmental and Resource Protection Prospectus at: http://www.sagady.com/sagady.pdf

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